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***Predicted changes in seafloor food-availability and suspension feeder abundances after a major Antarctic glacier-calving***

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Seafloor communities are a critical part of Antarctic biodiversity. Processes at the ocean-surface can strongly influence these communities, even when they live at hundreds of meters water depth. Recent work advances our understanding of how surface production, which is linked to sea-ice dynamics, can influence seafloor biodiversity. However, assessing impacts of changing icescapes on the seafloor community is difficult, because obtaining samples is time-consuming and expensive in the vast and remote Southern Ocean.

Here, we predict changes in seafloor food-availability and in the abundance of suspension feeders after a major change in the icescape in East Antarctica. We use a validated food-availability-model that combines satellite estimates of surface-chlorophyll-a with a purpose-built ocean model and particle tracking. For the predictions of the fauna, we use camera-images from the seafloor and a statistical model. Our results indicate strong changes in the oceanographic setting of the region, with a shorter ice-free season, altered seafloor currents and changes in food-availability. We predict the Mertz Bank, close to the previous tip of the Mertz Glacier Tongue, will experience increased food supply and sustain higher abundances of suspension feeders than the remainder of the region where food supply is predicted to decrease.

Our mapped predictions provide insight into how a changing icescape can impact life on the seafloor, which is important in light of current and future effects of climate change. Our study can be used as a decision-tool for focusing future sampling and monitoring initiatives, and the approach is transferrable to other Antarctic regions.